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Students as Producers: A Case Study of Technology-Based Projects

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Abstract: The existent literature on the integration of technology in language classrooms has addressed the issues of effective teaching strategies, the types of technologies students use, and teachers' preparedness in adopting technology for the classrooms. Some scholars argue that the effectiveness of technology largely relies on the teaching strategies that teachers utilize. The findings of some studies shed light on the impact of technology on students' attitude and engagement. Despite the unresolved debates about the use of technology in the classroom and its impact on student learning, the author's current projects using games, YouTube, blog, and microblogging services indicated that students benefit from the projects in several ways. The participants of this study were students in the English Department in a private university in Semarang. The data for this study were collected from interviews, observation, and students' learning reflective journals that students submitted upon the completion of the projects. The findings indicated that students felt more confident in applying their knowledge in real life situations. Interactions with teachers and peers, bridged by technology, contribute to their development as the creator of knowledge.

Key words: technology, blogging, YouTube, microblogging, active learning

Abstrak: Literatur mengenai integrasi teknologi di kelas bahasa telah membahas isu-isu strategi pengajaran yang efektif, jenis teknologi yang digunakan siswa, dan kesiapan guru dalam mengadopsi teknologi untuk

kelas. Beberapa ilmuwan berpendapat bahwa efektivitas teknologi sangat tergantung pada strategi pengajaran yang digunakan guru. Temuan beberapa penelitian menyoroti dampak teknologi terhadap sikap dan keterlibatan siswa. Meskipun ada perdebatan mengenai penggunaan teknologi di kelas dan dampaknya terhadap pembelajaran siswa, project pengarang saat ini dengan menggunakan permainan, YouTube, blog, dan microblogging mengindikasikan bahwa siswa mendapatkan keuntungan dari tugas ini dalam beberapa aspek. Peserta penelitian ini adalah mahasiswa Jurusan Bahasa Inggris di sebuah universitas swasta di Semarang. Data untuk penelitian ini dikumpulkan dari wawancara, observasi, dan jurnal reflektif pembelajaran siswa yang disampaikan siswa setelah selesainya proyek. Temuan menunjukkan bahwa siswa merasa lebih percaya diri dalam menerapkan pengetahuan mereka dalam situasi kehidupan nyata. Interaksi dengan guru dan rekan kerja, yang dijumpai oleh teknologi, berkontribusi pada perkembangan mereka sebagai pencipta pengetahuan.

Kata kunci: teknologi, blogging, YouTube, microblogging, pembelajaran aktif

INTRODUCTION

Much of the literature on the use of technology in classrooms has attempted to address questions revolving around how technologies affect student learning, what kind of learning technologies students take advantage of, what teaching strategies are the most appropriate, and whether teachers are ready to integrate these learning technologies into their classrooms. New innovations in learning technology and the needs to improve the quality of undergraduate education result in gradual paradigm shifts away from the traditional method of learning and toward active learning techniques.

Active learners, in contrast to orthodoxal students, are “active creators of knowledge who learn by observing, manipulating, and interpreting the world around them” (Alessi, 2001). While scholars have debated whether technology has a profound impact on student learning, existing literature indicates that the effectiveness of technology in the classrooms depends on the teaching strategies that instructors adopt (Van Horne, Murniati, Gaffney & Jesse, 2012). In technology-infused classrooms, instructors need to create new activities or revamp their current teaching strategies in order to engage students in their classroom (Van Horne, et.al., 2014).

Literature on the role of technology to enhance learning uses the term “net generation” to refer to the younger generation (Oblinger, 2003). This term is used to describe how well younger generations nowadays adjust to the technological gadgets. Research on the use of gadgets in North American universities has shown that university students have positive perceptions of the use of technological gadgets to enhance their learning, but the study also shows that the influence of technology on students’ course engagement is moderate (Dahlstrom, Brooks, & Bichsel, 2014).

Although more and more students believe that they are more familiar and more prepared compared to their counterparts in the past, students reported that the use of technology should be more integrated to improve the learning process. Students reported that in order to take the most advantage of technology to improve learning outcomes, training or guidance is necessary (Dahlstrom, Walker, & Dziuban, 2013). This corroborates the findings of a previous study on learning strategy. Brown & Volts (2005) found that students preferred a learning strategy which allows them to actively engage and participate in current global issues. This study showed that students felt comfortable in incorporating visual aids and technology to better understand the teaching materials.

Universities have a vital role in educating students to become a capable individual who can engage in a networked global society where shared knowledge is the most critical issue (Lehtinen, Hakkarainen, Lipponen, Rahikainen, & Muukkonen, 1999). Hence, universities should apply innovative teaching method that enables learners to interact with others in a much more meaningful way. For the past ten years, studies on the role of information technology and communication on education have looked at how technology can be integrated to enhance social interactions between student – teacher and among students themselves. One of the pedagogical strategies that provide ample rooms for students to improve the social aspect of learning and teaching process is collaborative learning.

Putnam (2008) proposed four affordances of technology in teaching and learning. He posited that technology offers four kinds of support; they are Information (information accessibility), Automation (tasks automation), Representation (knowledge representation) and Communication/ Collaboration (communication/collaboration with peers and experts). In the classrooms, these four affordances are viable if instructors are willing to design their classroom activities in such a way that students have plenty opportunities to create and share knowledge through interactions with peers. In their study

of active learning spaces in the University of Iowa, Van Horne et.al (2014) found that some learning technologies can be utilized as platforms for sharing ideas. In this kind of environment, students who are less engaged during the beginning of the semester will become more motivated and confident in contributing their viewpoints and ideas to group activities or the classroom as a whole. At the end of the semester, these students showed more positive attitude towards the course and increased engagement.

LITERATURE REVIEW

A. Technology and student learning

Friedman (2005) discussed the impact of technology on globalization. Friedman used the word “flat” to refer to the leveling of the playing field. In his book, he posited that any individual or country who have better access to technology possess wider opportunities to play a role in the global economy. Currently, the access to many forms of technology is already wide open. Universities worldwide take advantage of the rapid technology advancement to facilitate the process of teaching and learning. Young generations today have different characteristics compared to previous ones. Many students own different kinds of gadgets with a variety of programs and applications. Almost all young people, especially those in urban areas, to a certain degree, maintain social ties with different circles of people through mobile applications. They are highly engaged with other people around them through the internet and mobile devices (Oblinger, 2006).

Research on the extent to which existing technologies are effective and what kind of technology students possess for their learning show that there is a gap between the technology owned for personal use and their use in the classroom (Dahlstrom, Walker, & Dziuban, 2013). The most recent report on undergraduate education and information technology in 11 countries found that even though millennial students are known as ‘digital natives’ and are said to have better technology literacy than previous generations, slightly less than 50% of the respondents reported that they are not really confident about their technology-related skills (Dahlstrom, Walker, & Dziuban, 2015). However, research on student learning strategies showed that students prefer active learning strategies in which they can play an active role in solving the problems that exist in everyday life. Students also are more and more likely to be comfortable with the use of visual aids as a means to understand the material provided.

B. Active learning

Prince (2004) defined the term active learning as “any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing” (p. 223). One of the key elements of active learning is thoughtful student participation and engagement to attain the learning outcomes. Zayapragassarazan & Kumar (2012) identified four types of instructional approaches commonly used in active learning classrooms. They are individual activities, paired activities, informal small groups, and cooperative student projects.

The adoption of these strategies largely depends on the class size, course objectives, time availability, and teachers’ level of comfort with the strategy. Some studies found compelling evidence for active learning and the types of activities that work in classrooms. In an early study of active learning, Bonwell and Eison (1991) found that active learning improves student attitudes and thinking skills. Active learning methods require students to engage in discussions and use their high order thinking skills (Roehl, Reddy, & Shannon, 2013). Proponents of active learning believe that learning takes place when students are in charge of knowledge transmission and construction. Teaching strategies in active learning classrooms also center on the idea of collaborative participation and mutual engagement.

OVERVIEW OF STUDENTS’ TECHNOLOGY-BASED PROJECTS

In my language classrooms, my major role is to create engaging activities that will encourage students to internalize their knowledge and apply what they have learned through meaningful assignments. I want to make students active participants in class dialogues and to mediate the knowledge transfer and knowledge ownership. In most of my language classrooms, I design activities where students have to work in groups and take advantage of the available mobile social media applications such as Twitter or Facebook and internet-based programs such as YouTube and Wordpress.

A. Collaborative YouTube projects

For the past three years, as the first author, I inform that I have used YouTube in my Structure and Functional Communicative Speaking classes as a reinforcement of the grammatical rules and speaking functions of English.

English structure is one of the most challenging subjects for English language learners. Despite the fact that English structure is taught from early ages, many English language learners reported that they do not have a good mastery of English structure and have difficulties applying the grammatical rules in real life situations (Murniati & Riyandari, 2014). Therefore, in my Structure class, I have assigned YouTube video assignments related to the topics being discussed. For example, in the past, I asked students to upload videos in YouTube using the theme of Central Java Landmarks: Past, Present, and Future. The goal of the project was to make students apply their knowledge of simple past, present, and future tenses. Students had to pick one landmark and describe a brief history of the landmark, current projects/reservations, and the future of the landmark. The pictures below showcase some of the YouTube video projects that students submitted.

Figure 1:
Historical Gedong Songo video



As shown in Figure 1, three students worked on a Gedong Songo project. To produce the video, they visited Gedong Songo Temple complex and conducted an interview with people who are in charge of maintaining and preserving the temples.

The following figure is of a different YouTube centered project for English Structure class. In this project, three students described the history and the preservation efforts of a Buddhist temple in Semarang.

Figure 2:
Vihara Buddhagaya Watugong video

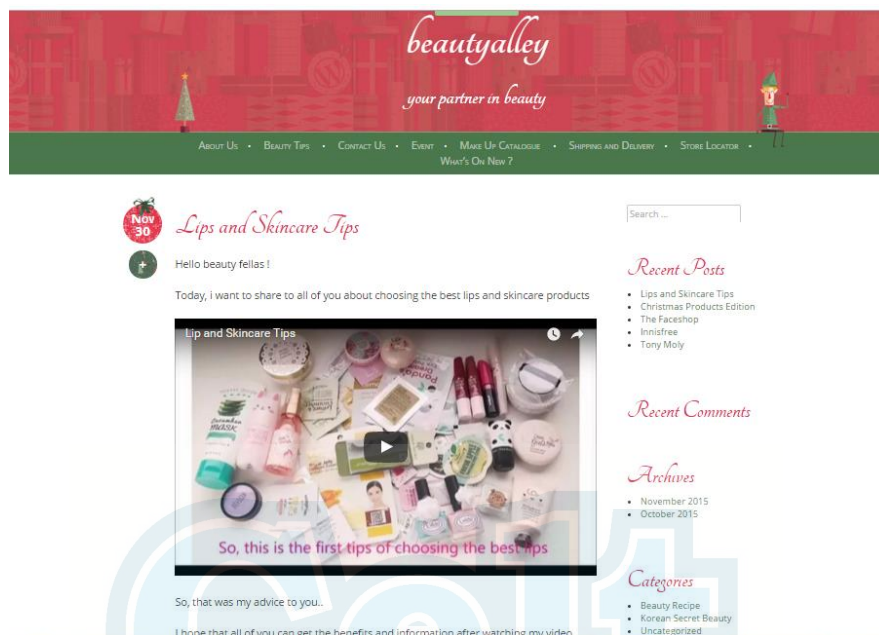


1. Individual blog project

Blogging was a required project for the Media and Technology in Englishpreneurship course. This course is for students specializing in Englishpreneurship. The course is designed to familiarize students with some digital technologies that they can use to market their products. In this course, the final project was a blog containing information about products/services. The project required students to include five or more information concepts about their ideas and services, such as “About Us”, “Products”, “Store Locations”, “Contact Us”, “Fashion Tips”, “Make-Up Tips”, or any other information pertinent to product marketing. In addition, the blog incorporated images, videos, and podcasts to add an element of creativity to their design. The following figures are a showcase some of the blogs that students produced.

Figure 3 is a blog project whose main objective was to sell Korean make-up and cosmetics and provide information about Korean beauty tips and tricks. The following figure is a screenshot of a blog homepage. The purpose of the blog was to sell clothes. The contents included fashion tips for women.

Figure 3:
Beautyalley blog



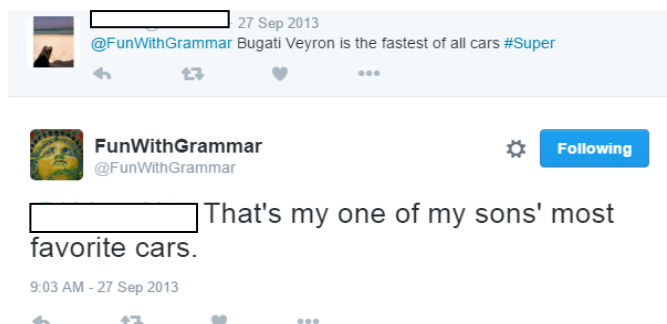
2. Individual twitter project

In language learning, microblogging services like Twitter can be a perfect tool to learn English outside of class. This popular mobile application allows registered users to post, receive, and read short status messages from their followers. Twitter can be accessed from anywhere and is available on different platforms. For language learners, this microblogging tool offers a plethora of opportunities for students to improve their writing skill and grammatical rules. Character limitation in Twitter is beneficial for elementary language learners because they can stick to simple short sentences.

In my Structure 1 class, I assigned Twitter projects because I wanted students to get accustomed to making short and simple sentences. In Structure 1 class, students learn basic sentence structure and the most common tenses. During the Twitter project, I asked students to follow me and post their statuses in English using the grammatical rules discussed in the class. They could describe their feelings, whereabouts, on-going activities, or plans. My responsibility as a teacher in this task is to provide feedback on grammar use

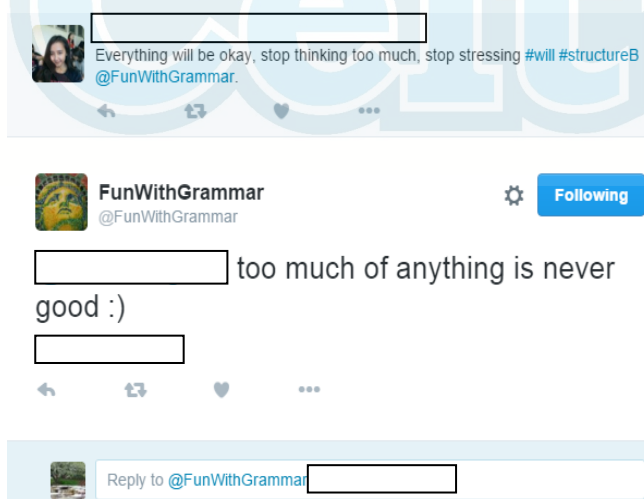
and sentence structure. Figure 5 below shows a conversation in Twitter. A student posted a tweet containing the use of superlative.

Figure 4:
A tweet containing the use of superlatives



The following figure shows a tweet containing the application of will (modal).

Figure 5:
A tweet containing the use of will

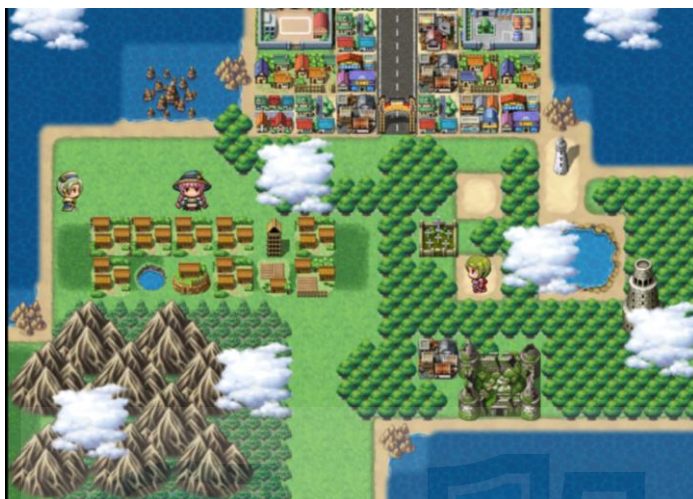


3. Group-based game-making

One of the most recent project incorporating technology for language learning is the collaborative learning through game-making. In this project, with my co-author, we taught students to make a role-play game using RPG Maker MV software. Activities in the game were created through the features

of the software and the templates we provided. To make this game, students had to modify the template, the maps, the characters, and the storyboards.

Figure 6:
Game template



The following figure is the result of one of the games that students created.

Figure 7:
Game result



To create the game, students had to work in groups of three and designed questions so that other people can play the game. To create question items for the role play game, students had to practice their writing and grammar skills as well as their knowledge of a certain topic. In the example above, students created a game on Korean drama. Players of this game were supposed to answer trivia questions about Korean drama and actors.

METHODOLOGY

The participants of this qualitative study were the freshmen of English Department in a private university in Semarang. To find out students' perception about the technology-enhanced projects, I distributed learning reflection essays that students had to submit upon completion of the project. In addition, I interviewed with several students to obtain more data on their attitude towards the projects, their challenges in completing the projects, and their perceptions about the benefit of such projects.

RESULTS

To assess students' attitude towards these technology-based projects, students were asked to write a learning reflection. They had to report on their challenges in creating those projects and to what extent those projects helped them in understanding the subject matter. These learning reflections were useful for me in order to redesign or revamp the syllabus or class projects to better suit the needs of the students. From the multiple data sources, three main response patterns emerged.

A. The advantages of technology-enhanced projects

1. Increased interest and creativity

In their learning reflections, students suggested that the projects made them capable of expressing their interests and allowed them to be creative. Students liked the project because they were able to work on things they are interested in. For instance, the blog project represented students' passions. One of the students who liked to grow cactus intended to use her blog to sell her plants and offer promotions for her new plants. Another student was into Korean beauty products and was very knowledgeable about various kinds of Korean makeup and cosmetics. This student used her blog to provide

information about her business and sell Korean beauty products. Another student who liked pets used his blog to sell pets and share useful tips about pets.

In YouTube projects, students were able to hone their creative side in producing their videos. They selected video themes, background songs, and animation carefully. Many videos contained deleted scenes or bloopers in order to show audience the process of video making.

2. Increased self-confidence

After completing their projects, I arranged one or two meetings to showcase students' projects. In these sessions, I asked students to give responses or feedback for their classmate's projects. Students liked the fact that they received feedback about their sentences and learned which expressions were incorrect. The feedback made them better comprehend the use of grammar and writing mechanics. In their YouTube project focusing on Comparisons, when I asked them whether the activities helped them understand the rules of English comparative patterns, students stated that their class mates' comments and the public nature of YouTube was a great motivator for them to be aware of grammatical rules during the script writing. In short, students did not want to make many mistakes because there is a possibility that they would receive some negative comments from their classmates or other anonymous people on YouTube commenting on incorrect English.

Being public was likely to increase students' awareness and self-esteem. This was evident from their multiple try-outs in creating media files. Audio and video recordings were conducted multiple times so as to obtain the best materials to be uploaded in YouTube or other social media. In addition, students also submitted their drafts before starting recording. In other words, being public increased their awareness of linguistic competence. They were worried if they were seen as linguistically incompetent. Students also reported that the public nature of social media increased their confidence.

The YouTube project requires more detailed attention to presentation and delivery. In order to produce good YouTube projects, students said that they had to rehearse several times and dress properly. Students stated that they were quite nervous initially, but after they were in front of the camera, they became much more confident.

3. Becoming better learners

Group-based technology-enhanced projects require students to utilize various diverse skills such as collaborating, interviewing, writing, designing, and public speaking. During the completion of these tasks, students reported that in general, they could work well with their classmates despite their hectic schedule. Students reported they were able to learn many different aspects of technology and English grammatical rules because they learned them from their classmates. In other words, students maximize their own potential by helping other students or learning from each other. Students wrote in their learning reflection that what they did help them tremendously in understanding a concept since at times they were required to explain a concept to their friends. In brief, they stated that they became better learners. They learned a lot by interacting with their peers, receiving and giving feedback from teachers and classmates, sharing their knowledge to other people.

B. Challenges in accomplishing technology-based projects

1. Internet connection

Students reported no major technical problems aside from the slow internet connection. Upon completion of the project, students reported that their digital literacy had improved and they did not encounter any major technical difficulties. Prior to their technology-based projects, students had their own social media accounts and had been active users of such account. Therefore, uploading YouTube videos or creating messages in Twitter was not something new to these students. They had no problems tweeting because they had used Twitter to maintain connections with their friends. Before this project, they already posted messages in English.

Many of these students stated that they were comfortable using the programs necessary to complete their projects even if they were new users. Audacity, for instance, was new to students, but from the observation, students seemed to be able to use it well. Creating podcasts for students' blog projects went smoothly even though students had to make themselves familiar with Audacity.

One of students' major complaints in completing their projects was slow internet connection. To accomplish some stages of the projects, sometimes students had to bring their laptops to class and had to be connected to internet. Unfortunately, when students were working on the project, the internet connection was unstable and the project became very time-consuming.

Some of the projects had to be completed in the classroom because team members were required to determine the outline, decide the design of the projects, or proofread the script or the storyboard. When many students were accessing the internet at the same time, the connection became very slow.

2. Less attention to content

Technology-based projects almost always incorporate good design. Students tried to make their projects look attractive; thus, they spent more time designing. During some of the classes, students put a lot of effort to make their project attractive by trying different themes, templates, images, and fonts. In their learning reflection, students acknowledged that this was done intentionally in order to make a project that had good designs and contents. However, during the writing process, students still made grammatical and spelling errors.

Sometimes, the mistakes were too obvious that they were distracting. In some of the video projects, the challenges to create good content were bigger. When working with video projects, students were supposed to pay attention to both contents and appearance, but the contents of the videos needed improvement the most. Some students addressed this issue as lack of editing time. They said they could have done better in editing if they had more time in completing their projects.

DISCUSSION

From multiple data sources, it is evident that technology-based projects foster students' sense of creativity and a better understanding of subject matters. By creating contents for their projects, students became more confident in applying their knowledge in real life situations. Interactions with peers and teachers, collaborative work among team members, collaborative work with bridged by technology, contribute to their development as the creator of knowledge.

The materials that students worked on were not something new, but students were able to present the materials that suited their needs and purposes in a creative manner. The ability to extract information from different sources through interviews, archival documents, and other online materials and combine them in one project made them a creator of knowledge. They were able to show their creative capability by making something new

from existing ideas and available information. Students had creative freedom to learn a concept, share it with their peers, and then create a new one.

In this way, they enhance their peers and their own learning. Being able to create contents through meaningful tasks and share them to the public made them better learners.

In this study, the most-frequently cited reason for technology-based projects was slow internet connection. This finding was similar to that in Carr et al. (2011). In their study, students' perceived benefits of technology-enhanced language learning were mostly related to computer-related issues. Although they had favorable attitude, the fact that their responses were more related to technology related issue was an indicator that students put more emphasis on technology and less attention to content or the learning process itself.

One of the objectives of college education is to create and shape a mindset that promotes genuine interaction and dialogue to solve social issues, economics, and politics that surround us in this world. Activities in the classroom should stimulate learners to sharpen their analytical and critical thinking skills.

Learning activities should open abundant opportunities for students to explore the world around them and to acquire and internalize new knowledge. Classroom activities have to provide the opportunities for students to contribute ideas and participate in meaningful discussions with their teachers and peers.

Young generations adjust better to technology. They own gadgets, use various kinds of applications and tools for entertainment, productivity, and social relationship purposes. The integration of technology in language classrooms, when carefully designed and implemented, can lead to increased engagement and participation and more positive attitude towards language learning. In addition, technological ambiguity gives rise to students' higher level of adaptability which may come in handy in their future professions.

CONCLUSION

Technology-enhanced projects are beneficial if they are incorporated carefully. The findings of this study indicated that such projects created favorable learning attitude and positive learning experience for the students.

Increased interest and creativity, higher level of self-confidence, and becoming a better learner were some of the perceived benefits. However, technology is not without limits. Sometimes technology is unreliable that students had to allocate more time to finish the projects. Internet connection was one of the major factors why students' projects were delayed. Another challenge was students' predisposition to spend more time on design instead of contents.

The findings of this study suggested that technology-based projects had potentials to be incorporated to the curriculum even though extra care must be done to ensure that students gain the most from the teaching and learning process. Future research should focus on the effect of technology-based projects on certain language skills and what kind of learning models that work best for technology-based projects.

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REFERENCES

- Barber, James P., Patricia M. King, and Marcia B. Baxter Magolda. (2013) Long strides on the journey toward self-authorship: Substantial developmental shifts in college students' meaning making. *The Journal of Higher Education*, 84(6), 866-896.
- Baxter Magolda, M. (2005). The Developmental Nature of Self-Authorship: The World of Students. In L.R. Lattuca, J.G. Haworth & C.F. Conrad (Eds), *College and University Curriculum: Developing and Cultivating Programs of Study that Enhance Student Learning* (pp. 393 - 408). Boston, MA: Pearson Custom Publishing.
- Bonwell, C. C., & Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom*. 1991 ASHE-ERIC Higher Education Reports. ERIC Clearinghouse on Higher Education, The George Washington University, One Dupont Circle, Suite 630, Washington, DC 20036-1183.

- Brown, A. R., & Voltz, B. D. (2005). Elements of effective e-learning design. *The International Review of Research in Open and Distance Learning*, 6(1). Retrieved on May, 2016 from <http://www.irrodl.org/index.php/irrodl/article/view/217/300>
- Carr, N. T., Crocco, K., Eyring, J. L., & Gallego, J. C. (2011). Perceived benefits of technology enhanced language learning in beginning language classes. *IALLT Journal of Language Learning Technologies*, 41(1).
- Dahlstrom, E., Walker, J. D., & Dziuban, C. (2013). *ECAR study of undergraduate students and information technology*.
- Dahlstrom, E., Walker, J. D., & Dziuban, C. (2015). *ECAR study of undergraduate students and information technology*. Retrieved on March 10, 2016 from <http://net.educause.edu/ir/library/pdf/ss15/ers1510ss.pdf>
- Friedman, T. L. (2006). *The world is flat: The globalized world in the twenty-first century* (pp. 3-543). London: Penguin.
- Lehtinen, E., Hakkarainen, K., Lipponen, L., Rahikainen, M., & Muukkonen, H. (1999). Computer supported collaborative learning: A review. *The JHGI Giesbers Reports on Education*, 10, 1999.
- Oblinger, D., & Lippincott, J. K. (2006). *Learning spaces*. Boulder, CO: Educause.
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of engineering education*, 93(3), 223-231.
- Putnam, R. (2008). Affordances of Technology for Supporting Teaching and Learning. SMU. edu. Retrieved from <http://centres.smu.edu.sg/cte/innovative-development/affordance-oftechnology/> (accessed August 21, 2014).
- Roehl, A., Reddy, S. L., & Shannon, G. J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning. *Journal of Family and Consumer Sciences*, 105(2), 44.
- Trollip, S. R., & Alessi, S. M. (2001). *Multimedia for learning: methods and development*. Needham Heights, MA: Pearson.

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- Van Horne, S., Murniati, C., Gaffney, J. D., & Jesse, M. (2012). Promoting active learning in technology-infused TILE classrooms at the University of Iowa. *Journal of Learning Spaces*, 1(2).
- Van Horne, S., Murniati, C. T., Saichaie, K., Jesse, M., Florman, J. C., & Ingram, B. F. (2014). Using Qualitative Research to Assess Teaching and Learning in Technology Infused TILE Classrooms. *New Directions for Teaching and Learning*, 2014(137), 17-26.
- Wenger, E. (1999). *Communities of practice: Learning, meaning, and identity*. New York, NY: Cambridge University Press.
- Zayapragassarazan, Z., & Kumar, S. (2012). Active learning methods. *NTTC Bulletin*, 19(1), 3-5.

